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أبحاث العدد :

THE IMPACT OF NUTRITION
SURVEILLANCE SYSTEM ON
NUTRITIONAL

DECISION- MAKING

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■ Abstract

- The current study aimed to identify the reality of using the nutritional Surveillance system in Nutrition General Administration in Ministry of Health & Population in Yemen as well as to Identify the impact the nutritional surveillance system represented in its dimensions (suitability, accuracy, timing, clarity, modernity) on the nutritional decision- making represented in its dimensions (problem defining and analysis, information collection and analysis, choosing the best alternative) in Nutrition General Administration in Ministry of Health & Population in Yemenites. To achieve the objectives of the study, the descriptive analytical method was used and the questionnaire was the main tool for collecting the data. The sample of the study included (37) individuals. The study came out with many findings. The study provided some recommendations, the most important ones were that, pay more attention to the dimension of suitability through the contribution of the information in solving the problems. Pay more attention to the dimension of timing through providing the information accurately and on time. Pay more attention to the dimension of clarity through providing clear and understandable information.

■ Keywords:

Surveillance, Nutritional, WHO, acute Malnutrition, Decision-Making,

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■ 1. Introduction

- Acute malnutrition is a common cause of diseases and mortality among children under five years old in the world. Each year, 19 million of children are suffering from acute malnutrition and half a million of them are dying (Department of Nutrition, 2014). Measuring the nutritional status of any community requires obtaining different types of information that can be collected in the context of nutritional investigations and national surveys that can be conducted at specific intervals. It can be also conducted within the framework of food and nutrition surveillance which means obtaining information continuously according to the World Health Organization (WHO, 2005). Nutritional Surveillance is a key requirement for the national nutrition policy or strategy. The Food and Agriculture Organization of United Nations (FAO) and the World Health Organization (WHO) have introduced the nutritional surveillance system for many years. The system of nutritional surveillance is a continuous process which must simultaneously be planned or it will be considered a waste of time and meaningless if information is collected without being analyzed and interpreted. The stakeholders must be convinced of the importance of such information that is provided by the nutritional surveillance system. This information must be used to support the health planning efforts to improve the nutritional status of community as well as to evaluate the nutritional programs (Musaiger, 1990). The difficulty in making decisions begins to arise when an individual faces a number of alternatives that have the same positive consideration or the same negatives sides. The process of decision-making begins with the definition of a particular problem which arises primarily and when it is difficult to achieve the desired goals.

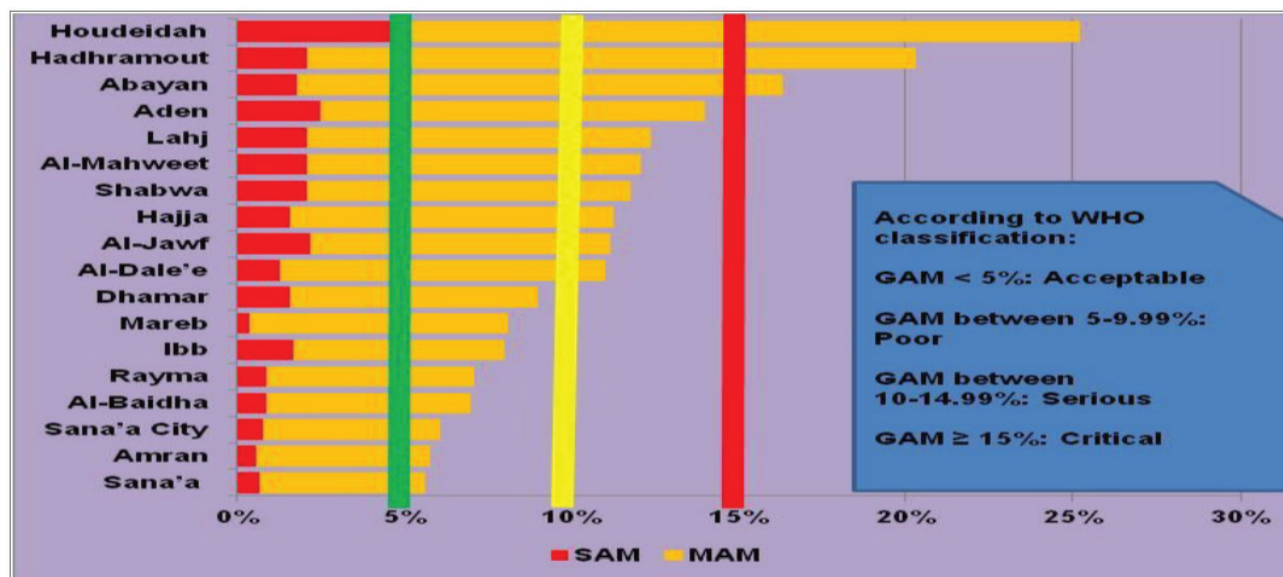
The process of decision-making often involves a situation of tension that arises mainly because of the conflict of the alternatives, uncertainty about the preference of the chosen alternative or fear about the negative consequences of applying the chosen alternative (WHO, 2007). The nutritional system in Yemen clearly reflects a major imbalance in the nutritional system of individuals and families. Malnutrition diseases are a public health problem that threatens the lives of children whose ages are below five years old. The rate level of the severe malnutrition was high with the percentage of (%15) according to the most recent survey of 2013. The acute malnutrition diseases often place burdens on any community and it is beyond the capabilities and material means that may bring infected children to death (Department of Nutrition, 2014). The main purpose of the current study is to identify the reality of using the nutritional surveillance system in General Administration of Nutrition in Ministry of Health & Population in Yemen? Some objectives are derived from the main purpose and presented as the following:

1. Identify the reality of using the nutritional surveillance system represented in its dimensions (suitability, accuracy, timing, clarity, modernity) in General Administration of Nutrition in Ministry of Health & Population in Yemen.
2. Identify the level of applying the nutritional decision- making represented in its dimensions (problem defining and analysis, information collection and analysis, choosing the best alternative) in General Administration of Nutrition in Ministry of Health & Population in Yemen.
3. Identify the impact the nutritional surveillance system represented in its dimensions (suitability, accuracy, timing, clarity, modernity) on the nutritional decision- making represented in its dimensions (problem identifying and analysis, information collection and analysis, choosing the best alternative) in General Administration of Nutrition in Ministry of Health & Population in Yemen.

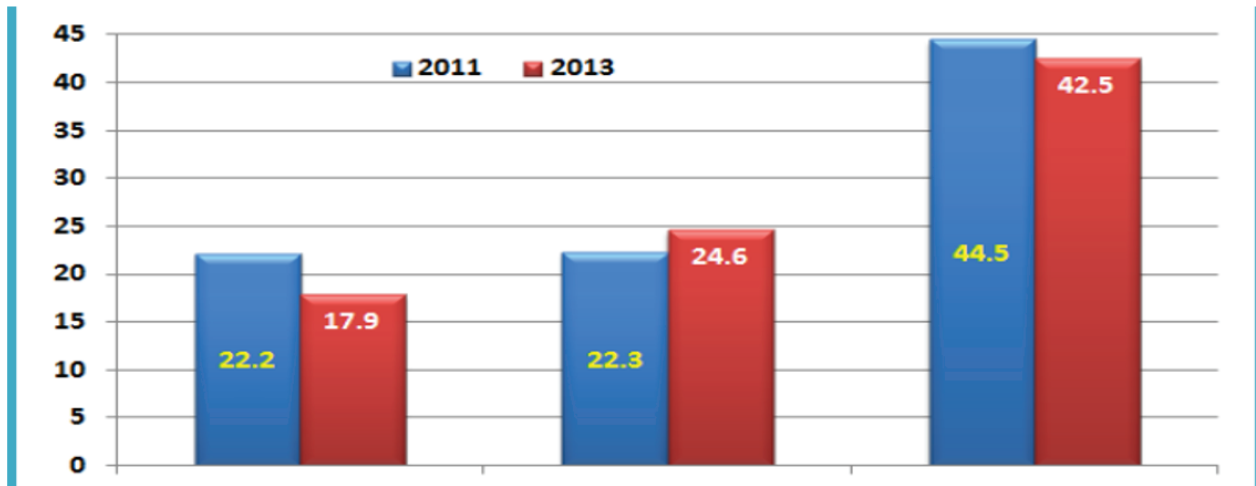
4. Provide a suitable proposal that would improve the nutritional surveillance system and serve the General Administration of Nutrition in Ministry of Health & Population in Yemen.

Based on the preceding presentation, the importance of the current study is to illustrate the reality of using the nutritional surveillance system and monitor the nutritional information that contributes to the analysis and interpretation of the underlying factors associated with the acute malnutrition. Moreover, it aimed to link the information with the future directions of the national nutrition strategy in achieving the total development goals and the comprehensive implementation plan for maternal, infant and young child nutrition, which will lead towards achieving the global nutrition targets by the year 2025. The current study also aimed to reach conclusions and provide recommendations.

figure 1. Global Acute Malnutrition among Children under 5 Years Old



that meet needs and benefits of nutritional programs as well as to promote the decision-making process in the General Administration of Nutrition in Ministry of Public Health & Population in achieving and Surveillance its objectives.

figure 1. Global Acute Malnutrition among Children under 5 Years Old

■ 2. NUTRITION SURVEILLANCE SYSTEM & NUTRITIONAL DECISION-MAKING

2.1 NUTRITION SURVEILLANCE SYSTEM

2.1.1 Concept of Nutrition Surveillance System

Surveillance is defined as a collection of information to see if the agreed context is maintained in advance (WHO, 2007).

The nutrition Surveillance was introduced in the 1970s which is derived from the concept of pathological Surveillance, then the term nutrition Surveillance was introduced in 1984. It is a system by which information on the status of food and nutrition is obtained on a continuous basis so that the situation of the population can be carefully monitored, and the appropriate measures can be taken whenever necessary. (Kelly) defined it as an ongoing process of collecting, analyzing and using data on the nutrition and health status of a group of individuals as well as identifying the availability and consumption of food for this group. Mason and his colleagues gave a simplified and comprehensive definition for the nutrition Surveillance as it is used for making decisions that improve the nutrition of community (Musaiger,1990).

The concept of nutrition Surveillance can be simplified as close and continuous surveillance for the nutritional status of community and it is used for taking action to remedy this situation. Therefore, nutritional surveillance must be linked to corrective programs that aimed to improve the social and health status of the country (Musaiger,1998).

2.1.2 Objectives of Nutrition Surveillance System

The goals of the nutrition surveillance system are simply a reflection of objectives of the General Department of Nutrition.

The overall objectives of the department cannot be achieved unless they are expressed as significant and meaningful sub-goals for the department's sections. This division that creates the specific organizational structure, as each unit of the organizational structure has an objective to achieve in the light of the overall objective of public administration (Al-Sayeh& Nashwan, 2005).

The objectives of the nutritional surveillance system must be consistent with the divisions of the organizational structure since nutritional surveillance provides information to all departments and units of the department in order to ensure that they carry out their planning, surveillance and decision-making functions. The objectives of nutritional surveillance are presented in the following according to (Musaiger,1990):

- 1.describe the nutritional status of society with a focus on the groups that can be most vulnerable to malnutrition.
- 2.provide information that can contribute to the analysis of pathogens associated with malnutrition diseases.
- 3.Predict the emergence of malnutrition diseases through available indicators.
- 4.Monitor of nutrition programs and measuring their impact and efficiency

2.1.3 Functions of Nutrition Surveillance System

The functions of food surveillance will enable to plan for future activities through the following points:

1.Data collection. Performance accounting, compilation, classification and summary through records, reports and control procedures. Data collection is the starting point for compilation, analysis and conclusions. The importance of accuracy in data collection cannot be overstated. This is the most important step in statistical methods. If errors occur in this process, the analysis and conclusion are wrong, and on this basis the accuracy and validity of the data depends on the validity of the results obtained. Two main reasons for the failure of many nutritional surveillance systems to produce the required response are: firstly, the lack of confidence in data when data are based on trends rather than on prevalence data. Second, the failure to respond to information on the nutritional surveillance system for political reasons.

2.Data processing. This phase of statistical work is aimed to present the data through summarizing it in a template and makes it easier for those involved, decision makers, researchers and those presented to them to obtain a clear picture of the phenomenon. Data are arranged logically, clearly and corrected. The reader is attracted not to the numbers, but to the trend of the numbers by increase, deficiency, or relationship between variables, as well as to the definition of the relation to the general situation and to the presentation of the data in beautiful images through expressive forms and drawings. The data shown in the reports should not disappear in the data processing unit but should continue in both directions from the base to the central unit and vice versa

3.Data analysis. The analysis phase aims to analyze the causes of malnutrition by different conceptual frameworks.

4.Interpretation of information. To properly understand and interpret food data, the following interrelated perspective must be taken into account according to (Al-Absi, 2018).

- Actual prevalence rates of acute malnutrition in relation to decision-making frameworks.
- Trends over time and seasonality.
- Review the expected seasonal changes in nutritional status by comparing routine prevalence rates for this time of year and for the same population.
- Review the underlying causes of acute malnutrition by considering patterns of nutritional status with regard to possible causes, including food security, care practices, public health and the relationship between malnutrition and mortality.
- Measurement of nutrition programs, follow-up and evaluation.

2.2 NUTRITIONAL DECISION-MAKING

2.2.1 Decision Concept

It's the behavior you choose for achieving achieve a particular goal (WHO, 2007).

The decision is to choose an alternative of available alternatives to find the appropriate solution to a serious problem arising from a changing world that is at the core of operational activity in business. Young defines it as an effective response that provides the desired outcome to a particular situation or set of potential situations in the organization. Bernard also defines it as the rational conduct of measures, calculation and reflection (Al-Absi, 2018), (Al-Fadl, 2004).

In the view of Cohen and Stoner, it is the selection process between available alternatives. Harrison defines it as the moment in the process of assessing goal-related alternatives, at which point the expectation of the decision-maker for a particular act makes a choice to guide the mechanism of his or her capabilities to the purpose. Stone defines it as the last stage in assessing the benefits of available alternatives, testing and putting into practice the best alternative (Hajr, 2001).

2.2.2 Elements of Decisions

Two important elements are required for the administrative decision requirements as they are presented in the following:

1.Problems. There are some kinds of the problems which can be presented in the following:

-known problems: There is information that can be accessed, but it needs effort, and it may not be complete.

-Well-known problems: they are the easiest problems where alternatives are known, information about them is complete, and situations of nature are unknown and constant.

-Mysterious problems: They are those for which there is no information, information is difficult to obtain, and cases of nature are unknown.

2.Solutions. As is known, we can obtain solutions using three types as they are presented in the following:

-Routine decision: This decision is concerned with well-known information which is a decision that is available and accessible.

-Adaptation decision: To reinstate and adapt the routine resolution to the new situation, that is, again.

-New decision: This decision concerns vague information, is made for the first time and does not know anything about it, and there is no prior experience or information about this type of decision.

2.2.3 Importance of Decision-Making

The decision-making process in our daily lives is particularly important because of its strong association with individuals, groups or organizations. In scientific and practical terms. In terms of the importance of decision-making at the individual level, it is highlighted by the many decisions that an individual makes in his or her daily life which affect the individual and others. In business organizations, it is important for the executive Director (Al-Hababi,2013).

The decision-making process is also directly related to the functions of the administrative process and is illustrated as follows according to (Al-Qaisi, 2004).

1.Decision-making and planning. Planning is a core business of managers, and it follows certain rules. In particular, the steps by which planning takes place go through many decisions relating to objectives, strategies, policies, procedures and, finally, the method of implementation required in the substantive plans. Decisions extend until such time as such implementation is completed through continuous follow-up to the plans.

2.Decision-making and organization. Decision-making is linked to the organization from multiple angles, the most important is organizational structure. Organizational measures, nature of relations between employees, division of labor and responsibility of employees. The nature and importance of decision-making varies depending on the nature of the organization and the problem and degree of decentralization it takes.

3.Decision-making and coordination. Coordination is linked to the decision-making process through the organization and consolidation of the organization's human and material efforts and capacities to ensure its proper use for decision-making and implementation.

-Balance: The objective is to provide each department with more effective needs.

-Timing: It requires that the decision be taken in a timely manner without any delay, because a delay in the timely adoption of the resolution would delay action and thus all other achievements that depend on it.

-Integration: This requires the harmonization of the activities of the different sections and branches with the efforts of the staff of the section or branch within a coherent cooperative framework that will help to integrate, consolidate and mobilize efforts to achieve the desired objective in the best possible manner.

4.Decision-making and guidance. After a major development in behavioral science that has forced Administration to pay attention to employees and organizational behavior to increase their efficiency, target them, correct the deviations and errors they may be in, require managers to recognize the psychological implications that their decisions will have on individuals (Kanaan, 2009).

5.Decision-making and oversight. Many decisions are taken by the responsible authority in the event of certain deviations from the policies and instructions imposed by the administration, in the event of violations of prevailing laws and regulations, in the case of performance imbalances or in the application of the plan drawn up by the administration (Al-Qaisi, 2004).

3. METHODOLOGY

This Section presents the method of the study, its instrument, its population and sample. It also presents how the instrument of the study was prepared, its validity, reliability and the statistical treatments that were used to reach the results.

3.1 Study Method

The analytical descriptive approach was used as a method for the current study to collect and analyze the data related to " The impact of nutritional surveillance system on the nutritional decision making in General Administration of Nutrition in Ministry of Health & Population in Yemen".

3.2 Data Collection

- Secondary sources. Many secondary resources have been revised in this paper, most notably: Arabic and foreign books, periodicals, articles, published reports, and previous studies that dealt with the impact of nutritional surveillance system on the nutritional decision making.
- Primary sources. The preliminary data was collected, the population and the sample of the study were identified. The questionnaire was designed precisely for collecting the data from participants of the study's sample. The Statistical Package for Social Sciences (SPSS) program was used to analyze the data.

3.3 Population

The population of the current study included (37) individuals, and it covered three groups as the following:

- First group. This group covered (21) employees like (general managers, deputy managers, administrations' managers, head of sections, programs responsible) who work in the General Administration of Nutrition in Ministry of Health & Population in Yemen. The sample of this group was randomly chosen.

- -Second group. It covered the nutrition coordinators in offices of Ministry of Health & Population in Sana'a city. This included coordinators of zones that apply the nutrition surveillance system like (Maeen, Bani Alhareth, Al thareer, Alsabeen). The sample of this group was not randomly chosen and it includes (6) individuals.
- -Third group. It covers the international organizations funders that are interested in nutritions like the World Health Organization (WHO) and UNICEF. The sample also was not randomly chosen and it included (5) individuals. The organization of (WFP) was excluded as it has no relation with the Ministry of Health & Population.

3.4 Sample

- The sample of the current study included (37) individuals, the retrieval forms of the questionnaire were (33) and represented (%89) of the total population. The following figure presented that.

Table (1) Size of Study Sample

Group	Distributed Forms	Retrieved Forms	Valid Forms
Group 1	21	19	19
Group 2	6	5	5
Group 3	10	9	9
Total	37	33	33

3.5 Study Instrument

The questionnaire was used as the main tool for collecting the data related to the investigated problem, the steps of preparing the questionnaire of the study are presented in the following points.

3.5.1 Steps of Preparing Study Instrument

The main sections of the questionnaire and the statements of each section were determined as shown in appendix (1). The following table presented that.

Table (2) Study Instrument

Variables	Dimensions	No. Statements
Demographic Variables	gender, age, qualifications, career level, years of experience, years of experience in nutrition	
Nutrition surveillance system	Suitability	5
	Accuracy	5
	Timing	7
	Clarity	5
Nutritional decision making	Problem identifying and analysis	8
	Information collection and analysis	4
	Choosing the best alternative	5
Total		43

3.5.1.1 Measurement Scale

The Likert scale was used in the current study to measure responses of the participants. The following table presented that.

Table (3) Likert Scale for Measuring Responses

Response	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Rank	٥	٤	٣	٢	١

If the participant chose "strongly agree ", the relative weight in this case would be %100, and the results of the statement would be positive according to the relative weight. The total relative weights of the positive statements are calculated as well as the relative weights of the negative statements. The following table presented that.

Table (4) Relative Weight

N	Scale	Relative Weight (From to	100%
1	High	From 3.4- 5	From 68 to 100%
2	Medium	From 2.6 to less than 3.40	From 52. % to less than 68%
3	weak	Less than 2.6	less than 52 %

3.6 Instrument Validity

The structure validity measures to which extent the objectives of the instrument were achieved, and to what extent each statement was related to its section. The following steps were used to assure the validity of the instrument.

3.6.1 Instrument Validity and Reliability

The reliability of the questionnaire means the reliability of its results. The reliability of the questionnaire was verified through using Cronbach's Alpha Coefficient test, the following table presented the results.

Table (5) Reliability of Study Instrument

Variable	No. statements	Alpha Cronbach	Validity	Sig
Nutrition Surveillance System	26	0.899	0.979	0.000
Nutritional Decisions Making	17	0.795	0.953	0.000
Total	43	0.932	0.985	0.000

The correlation is statistically significant at ($\alpha = 0.05$)

Table (5) showed that the total value of all sections of the questionnaire according to Alpha Cronbach was (0.932) which indicated that the instrument was reliable, and its results were highly acceptable.

3.7 Statistical Treatments

The Statistical Package for Social Sciences programs (SPSS) was used to analyze the data of the current study. Many statistical treatments were used to analyze the data as they are presented in the following.

- Frequencies, means, relative importance and standard deviation
- Kolmogorov – Simonov Test K-S for Normality Distribution.
- Pearson Correlation
- One Sample T. Test
- Cronbach's alpha
- Simple and Multiple Regression tests for Correlation Analysis.
- One Way Anova

4. RESULTS AND DISCUSSION

The application level of nutrition surveillance system was medium with an average of (%67.8). The application level of nutritional decision- making was high with an average of (%70.1). There was a statistically significance impact at the significance level ($\alpha=0.05$) for the nutrition surveillance system represented in its dimension suitability on nutritional decision-making in the General Administration of Nutrition in Ministry of Health & Population in Yemen. There was a statistically significance impact at the significance level ($\alpha=0.05$) for the nutrition surveillance system represented in its dimension accuracy on nutritional decision making in the General Administration of Nutrition in Ministry of Health & Population in Yemen. There was a statistically significance impact at the significance level ($\alpha=0.05$) for the nutrition surveillance system represented in its dimension timing on the nutritional decision-making in the General Administration of Nutrition in Ministry of Health & Population in Yemen. There was a statistically significance impact at the significance level ($\alpha=0.05$) for the nutrition surveillance system represented in its dimension clarity on the nutritional decision making in the General Administration of Nutrition in Ministry of Health & Population in Yemen. There was a statistically significance impact at the significance level ($\alpha=0.05$) for the nutrition surveillance system represented in its dimension modernity on the nutritional decision making in the General Administration of Nutrition in Ministry of Health & Population in Yemen. There were no statistically significance differences at the significance level ($\alpha \leq 0.05$) among the participants of the study attributed to the demographic variable (gender) towards the impact of the nutritional surveillance system on nutrition decisions making in the General Administration of Nutrition in Ministry of Health & Population in Yemen is accepted.

There were statistically significance differences among the participants of the study towards the dimension of modernity attributed to the demographic variable (age). there were no statistically significance differences among the participants of the study towards the dimensions (suitability, accuracy, timing, clarity and nutrition decision making) attributed to the demographic variable (age). There were statistically significance differences among the participants of the study towards the dimension of modernity attributed to the demographic variable (qualifications). There were no statistically significance differences among the participants of the study towards the dimensions (suitability, accuracy, timing, clarity, and nutrition decision making) attributed to the demographic variable (qualifications). There were statistically significance differences among the participants of the study towards the dimensions (suitability, accuracy, timing, and nutrition decision making) attributed to the demographic variable (career level). There were no statistically significance differences among participants of the study towards the dimensions of (modernity and clarity) attributed to the demographic variable (career level). There were statistically significance differences among the participants of the study towards the dimensions (suitability, accuracy, timing, clarity and nutrition decision making) attributed to the demographic variable (years of experience in nutrition). There were statistically significance differences among the participants of the study towards all dimensions attributed to the demographic variable (years of experience).

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Decisions Properties:

Decision has some features as they are presented in the following according to (Al-Hababi,2013).It's rationale ; they are affected by factors of a human and social nature ; stretches from the past to the future ; tt is based on joint collective efforts; It's general and comprehensive ; dynamic going on ; and constrained, sometimes slow, complex and difficult.

Factors Influencing Decision-Making:

: There are many factors that influence the decisions, they are presented in the following according to (Kanaan, 2009).

Organizational factors:

The factors of the internal environment and characteristics of the organization are those that influence the decision-making process: The forces inherent in the administrative position that created the problem in question, the administrative communications, the Delegation and administrative decentralization. The scope of potential that the Director has over his or her subordinates. The laws, regulations and instructions, the human factors and the information system.

External environment factors.

The external environment is an element of pressure on organizations in many of their decisions. Economic conditions, the political circumstances and the financial circumstances (Al-Hababi,2013).

Technological and technical developments:

These factors affect the management decisions of the organization in different situations, and management must take these considerations into account in order to align the interest of the organization with the surrounding environment.

5. Conclusion and Recommendations

5.1 Conclusion

- 1.The General Administration of Nutrition lacks a comprehensive and integrated database.
- 2.Failure to update hardware and software.
- 3.Using traditional (manual) methods to save and archive data and information, and not relying on the automated system.
- 4.Monopoly of work and information by some specialists.
- 5.Weak strategic planning, through which strengths and weaknesses are identified, as well as opportunities and threats, so that the nutrition decision maker can prepare nutritional and awareness-raising solutions and interventions to confront current and expected nutritional problems in the future.
- 6.Centralization of information and nutritional decision-making.
- 7.Inadequacy in providing information about the external environment.

5.2 Recommendations:

According to the findings, the study provided some recommendations which are presented as the following:

- Pay more attention to the nutrition surveillance system in general.
- Pay more attention to the dimension of suitability through the contribution of the information in solving the problems.
- Pay more attention to the dimension of timing through providing the information accurately and on time.
- Pay more attention to the dimension of clarity by providing clear and understandable information.
- Pay more attention to the dimension of modernity through providing modern devices and software programs.
- Pay more attention to the process of decision making through identifying and analyzing the information as well as improving the processes of choosing the best alternatives.
- The role of nutrition surveillance system in evaluating nutritional programs.
- The efficiency of nutrition surveillance system in enhancing the General Administration of Nutrition in Ministry of Health & Population in fulfilling its objectives.

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